Dragon Amateur Radio User Group

c/o Roger Woods, 20 Heol-ap-pryce, Yorkdale,
Pontypridd, Mid-Glamorgan. CF38 2SH.
Telephone Newtown Llantwit (0443) - 201694 [after 6:30 p.m. please.]

Issue 7 - August 1987

*

Editorial.

Input this issue has been very sparse. Probably due to the Summer Holidays, No time to play with the Dragons. Please remmember that I can only print what you send me. I have recieved a load of programs on disk from DK1VI - Ernst Wawrzik and I've used these to fill the newsletter up. The only problem is most of these programs need the Compusense hi-res program either on disc or cartridge. They can be amended for normal screen use but as I have the hi-res driver I will leave the amending to you.

SO LET'S MAKE THE NEXT ONE A BUMPER ISSUE

SEND IN YOUR MOD'S, PROGRAM'S ETC. ETC. ETC.

YOUR DRAGON USER GROUP NEEDS YOU YOU YOU YOU YOU !!!!!!!!!!!!!!!!!!

*****

G4BMK Packet radio for Dragon 32 or Dragon 64.

The program is supplied by:-

Grosvenor Software
2 Beacon close
.Seaford
East sussex
BN25 2JJ
0323 893378

The program is available on Disc or Cartridge and runs packet without the use of an expensive Terminal Node Controller. The program only needs a modem running the normal packet tones. Modems can be supplied with the program to form a complete package, home brewed from the circuit diagram supplied or from :-

GM4JJJ/GM4UJZ
West house
Cowstrandburn
Saline
Fife
KY12 9HP
031-331-2755

The cost of the program from Grosvenor is #49:00 on cartridge or #42:00 on disc. The full package is # 99:00. The latest prices i have from GM4JJJ/GM6UZJ ranges from #9:95 for bare P.C.B. to #44:95 for a fully built and tested unit (this is minus the case, plugs, sockets etc).

Now the program. It comes with full instructions and is now up to version 1.5. Updates are freely available from Grosvenor for a nominal charge. The instructions are in A4 format and are quit comprehensive. The system I use is the BMK program with the GM4JJJ modem. the software supports both 1200 baud for VHF and 300 baud for HF. The cassette relay can be used to control the transceiver and the connections for the modem are taken, as with all BMK programs, from the printer port. There are 4 screens and these are used as follows:-

S0 - Qso screen.
S1 - Display parameter screen.
S2 - Display Beacon and Connect screen.
S3 - Displays 20 most recent stations heard (not via digipeater).

There are 8 channels and you can have up to 6 separate qso's at a time. Channel 7 is reserved for general monitoring. Channel 0 is used to display the beacon status and also all text for channels 1-7 in the order they were received. Any or all of the remaining 6 channels can be sent to unproto mode i.e. for sending CQ calls or general broadcasting. The program has a type ahead buffer of up to 60 characters. There is a 24 hour clock and all packet details received are time stamped and there is a facility to display this or not.

Briefly other features of the program are as follows:-

Beacon - This allows you to send out pre-programmed information with time delay units of 1 to 9 each unit being 12 minutes in length.

Spool - This allows you to spool, automatically, text to a dis drive but needs a separate utility to read it. Mike Kerry (G4G4BMK) has advised that this will be available shortly and will be in the region of #5:00. [this will be really useful for when unattended operation is allowed !!!!!- WE live in hope!].

Version - The program will automatically switch between the AX25 packet versions 1 or 2 as needed. The program is version 2 but some of the older TNC's around are still running version 1.

Connect - This will automatically send out a pre-programmed message when ever anyone connects with you.

Poll - This allows you to set up an UNPROTO channel addressed to WHO. Any BMK packet users on receipt of this will transmit their beacon text. This will not work via digipeaters.

Myheard - Screen 3 displays the last 20 callsigns heard direct not via repeaters. If you input the command MH then the program will send the last 20 callsigns heard, also a connected station can request this information by sending to you ?MH.

Control - Control characters, necessary for some TNC's can be sent by pressing CLEAR and the letter at the same time.

I have been using the software for some 4-6 months and have found it easy to use with very few problems. The program and modem represents an inexpensive way to communicate via packet radio and I can recommend it.

*****

PRESTEL.

I'm now on Prestel via a Spectrum 128 (Sorry but it was cheap - Nice micro! shame about the keyboard.) So if anyone wants to get a message to me via prestel my mailbox no is 011111572.

*****

/27,45,1B.

Apologies for the delay in this issue. My printer went u.s. due to operator error. Don't try to take out printer labels the wrong way they get entangled in the rollers and it's a very fiddly job to extract them!!!

******

Dragon User Magazine.

Some members who have only just got their Dragon may not realise that there is a commercially produced monthly magazine for the Dragon called "DRAGON USER". The magazine is mail order only and the subscription inc. postage is #14:00. It's a mix of adverts, reviews, programs etc. It helps keep the Dragon alive and has some interesting adverts. It deserves to be supported by all dragon users as it's the only means by which we can see what's on offer for the Dragon. Also in reply to my request about some copies of the magazine which I was missing, John Brown sent me 6 copies of which 2 I have retained. I have got NOVEMBER 83, FEBRUARY 84, MARCH 84 and MAY 84 which are offered on a first come, first served basis. John has donated them to the group but it cost him over #2:00 to send them. I propose, that if anyone wants one or all of them, they a S.A.E. (with correct postage) plus 40p per copy and I will then be able to refund John his postage.

*****

Format of Newsletter.

In future the newsletter should be better formatted. In the past, as I prepare the newsletter using OS9, I have had to llist the programs and try and gauge the amount of space they would take in between the text. Hence the reason most of them have been at the end. I can now take a Dragon basic program from disc and put it on Flex (another Dragon 64 operating system) and then transfer from flex to OS9. Although there are programs to transfer direct from Dragondos to OS9, they are fiddly. I hope this "new" way will make the listing's more accurate and the newsletter look better.

PLEASE LET ME KNOW IF YOU THINK IT'S O.K.

Ralph Marchant has suggested we have a front cover. I think this is great idea and suggest we ask YOU to design one. It should be A4 size and will photocopy well. We could then print all the entries in a newsletter and YOU (THE GROUP) can choose. The person designing the cover chosen could be given a year's FREE sub's.

PLEASE LET ME HAVE YOUR COMMENTS?

*****

Dragon 64 Mailbox (Jurie Deale ZR4AAD).

The two program listing 64MAIL and MAILBOX are the same program. The 64MAIL has a test routine with it to simulate input signals. Load 64MAIL and run the program. When in the receive mode. type as follows:-" :ZR4ADD (c/r)" and it should give you some idea of how the RBBS works. All commands must be preceeded with ":" and then the command required. I normally use the test routine whenever I have made modifications to the RBBS. The RBBS (mailbox) is the one with no trimmings such as callsign storing and asking. The other one (64mail) is ready to go on air and will only need the callsign changing.

[*I have not used this program and would welcome comments and/or any mods. made, as will Jurie - Roger.*]

Mail

```
10 CLS
20 PRINT"   DRAGON 64K MAILBOX PROGRAM "
30 PRINT"   ========================="
40 CLEAR 3000
50 Q$="   please use the 64 k mode!!"
51 PRINT@226," UP-ARROW: FORCES LET/SHIFT."
52 PRINT" DOWN-ARROW: CLEAR SCREEN"
53 PRINT" LEFT-ARROW: CHECKS MAILBOX"
54 PRINT:PRINT"      MAILBOX - 50 BAUD"
55 PRINT@450,"THIS PROGRAM WAS WRITTEN BY          ZR4AAD AND ZR4CZ";
60 FOR AA=1 TO 10:PRINT@128,Q$
70 FOR AB=1 TO 300:NEXT AB
75 PRINT@128, STRING$(32,CHR$(143))
80 FOR AC=1 TO 300:NEXT AC:NEXT AA:PRINT@128,Q$
81 PRINT@394,"please wait"
85 FOR AC=1 TO 2000:NEXT AC
```

```
90 REM******SETUP ARRAYS*******
100 DIM A$(2,31),TT(56),E$(5,5):ST=1:M=1:P=0:F=0
110 REM****** BAUDOT CODE ******
120DATA13,26,11,15,18,0,0,12,3,28,29,22,23,19,1,10,16,21,7,6,24,14,30,0,0,0,25,0,3,25,14,
9,1,13,26,20,6,11,15,18,28,12,24,22,23,10,5,16,7,30,19,29,21,17
130 DATA E, ,A," ",S,I,U, ,D,R,J,N,F,C,K,T,Z,L,W,H,Y,P,Q,O,B,G, ,M,X,V
140 DATA 3, ,-, , ,8,7, ,$,4, ,",",%,":",(,5,+,),2, ,6,0,1,9,?,&, ,.,/,=
150 FOR L=1 TO 54
160 READ TT(L)
170 NEXT L
180 FOR ST=1 TO 2:FOR L=1 TO 30
190 READ A$(ST,L)
200 NEXT L,ST
210 REM***SET UP PORT**********
220 ST=1:P=0
230 A=&HFF04:B=&HFF05:C=&HFF06:D=&HFF07
240 POKE D,241:POKE C,3
250 REM****RECEIVE ROUTINE******
260 CLS2:PRINT" DRAGON MAILBOX RECEIVE ROUTINE"
270 PRINT
280 'R=PEEK(B)
290 R$=INKEY$:IF R$="" THEN 290
300 IF ASC(R$)=50 THEN C$=C$+"2":PRINT"2";:GOTO 290
310 IF ASC(R$)=13 THEN R1=2:GOTO 450
320 IF ASC(R$)=58 THEN C$=C$+":":PRINT":";:GOTO 290
330 IF ASC(R$)=52 THEN C$=C$+"4":PRINT"4";:GOTO 290
340 IF ASC(R$)=32 THEN C$=C$+" ":PRINT" ";:GOTO 290
345 IF ASC(R$)=8 THEN 720
350 ER=ASC(R$):R1=TT(ER-36)
360 R$=INKEY$:IF R$="" THEN 370 ELSE IF ASC(R$)=8 THEN 720
370 'IF R$="" THEN 380 ELSE IF ASC(R$)=48 THEN 380
380 'IF R$="" THEN 390 ELSE IF ASC(R$)=94 THEN ST=1:SOUND 20,4
390 'IF R$="" THEN 400 ELSE IF ASC(R$)=10 THEN CLS2:GOTO 260
400 'IF R AND 8 THEN 410 ELSE 280
410 'R1=PEEK(A)
420 IF R1>0 AND R1<32 THEN 430 ELSE 280
430 IF R1=31 THEN ST=1:GOTO280
440 IF R1=27 THEN ST=2:GOTO280
450 IF R1=2 OR R1=8 THEN 510
460 B$=(A$(ST,R1))
470 C$=C$+B$:PRINT B$;
480 IF LEN(C$)>128 AND FG=2 THEN GOSUB 640
490 IF LEN(C$)>128 THEN C$="":GOTO 280
500 GOTO 280
510 PRINT
520 IF C$="" THEN 280
530 L=LEN (C$):FOR ML=L TO 1 STEP -1:IF MID$(C$,ML,1)=":" THEN 550
540 NEXT ML
550 D$=MID$(C$,ML+1)
560 IF D$="END" AND FG=2 THEN GOSUB 640:FG=0:M=M+1:P=0:GOSUB 870:TX$="MESSAGE
RECEIVED.#$WILL CONTACT YOU SOON.#$DE ZR4AAD.#$":GOSUB 990:GOSUB
940:C$="":D$="":ST=1:GOTO 280
570 IF FG=2 THEN PRINT:C$=C$+" ":GOTO 280
580 IF D$="ZR4AAD" THEN FG=1:GOSUB 870:TX$="#$DRAGON MAILBOX (ZR4AAD).#$SORRY ZR4AAD IS
NOT HERE.#$SEND RYRY:MESSAGE (C/R) TO#LEAVE A MESSAGE.":GOSUB 990:GOSUB 700:GOSUB
940:ST=1:GOTO 280
590 IF D$="BYE" AND FG=1 THEN FG=0:GOSUB 870:TX$="#$THANK YOU FOR THE CONTACT#
-73'S---#$DE ZR4AAD.#$":GOSUB 990:GOSUB 940:ST=1:GOTO 280
600 IF D$="MESSAGE" AND FG=1 THEN GOSUB 620
610 C$="":GOTO 280
620 IF M=6 THEN TX$="SORRY; BUT MY MESSAGE BUFFER IS FULL.#$PLEASE CONTACT ME LATER.#$DE
```

```
ZR4AAD.#$":GOSUB 870:GOSUB 990:GOSUB 940:ST=1:GOTO 280
630 FG=2:TX$="#END YOUR MESSAGE WITH :END (C/R)SEND YOUR MESSAGE NOW.....#$":GOSUB
870:GOSUB 990:GOSUB 940:RETURN
640 P=P+1
650 E$(M,P)=C$
660 C$=""
670 IF P=5 THEN M=M+1:P=0:GOSUB870:FOR J=1 TO
2000:NEXT:TX$="RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY#$MY BUFFER IS FULL.#$PLEASE
LOG ON AGAIN AND CONTINUE#$WITH YOUR MESSAGE.#$DE ZR4AAD.##$":GOSUB 990:GOSUB
940:FG=1:ST=1:GOTO 250
680 RETURN
690 GOTO 280
700 REM*STORE OVERFLOW MESSAGES
710 TX$="#$SEND RYRY:BYE (C/R) O-N-L-Y IF#$YOU DIDNT LEAVE A MESSAGE.#$DE
ZR4AAD.#$":GOSUB 990:RETURN
720 REM*******READ MESSAGE********
730 IF M=1 THEN SOUND20,5:GOTO 280
740 FOR K=1 TO M-1
750 CLS
760 FOR L=1 TO 5
770 PRINT"MESSAGE#";K;" PAGE#";L
780 PRINT E$(K,L)
790 IF INKEY$="" THEN 790
800 CLS
810 NEXT L
820 IF K+1=M THEN CLS:PRINT"PRESS ANY KEY TO CONTINUE...":GOTO 840
830 CLS:PRINT"PRESS ANY KEY TO SEE THE        NEXT MESSAGE.."
840 IF INKEY$="" THEN 840
850 NEXT K
860 GOTO 250
870 REM********TX ON**************
880 FOR J=1 TO 300:NEXT J
890 POKE C,5
900 POKE D,241
910 EXEC &HC015
920 RETURN
930 REM
940 REM********TX OFF************
950 FOR J=1 TO 300:NEXT J
960 POKE C,3
970 EXEC &HC018
980 RETURN
990 REM**TRANSMIT ROUTINE******
1000 SA=1
1010 FOR J=1 TO 150:NEXT J
1020 L=LEN(TX$)
1030 FOR S=1 TO L
1040 B$=MID$(TX$,S,1):TX=ASC(B$)
1050 IF TX=35 THEN TX=8:PRINT:GOTO 1120
1060 IF TX=32 THEN PRINT" ";:TX=4:GOTO 1120
1070 IF TX=36 THEN TX=31:GOTO1120
1080 IF TX<65 AND SA=1 THEN SA=2:TX=27:S=S-1:GOTO 1120
1090 IF TX>64 AND SA=2 THEN SA=1:TX=31:S=S-1:GOTO 1120
1100 TX=TT(TX-36)
1110 PRINTB$;
1120 POKE A,TX
1130 IF PEEK(B) AND 16 THEN 1140 ELSE 1130
1140 NEXT S
1150 C$=""
1160 RETURN
```

Mailbox.

```
1 REM DRA.HAM GROUP - 05:04:1987
10 CLS
20 PRINT"   DRAGON 64K MAILBOX PROGRAM "
30 PRINT"   ========================="
40 CLEAR 3000
50 Q$="   please use the 64 k mode!!"
51 PRINT@226," UP-ARROW: FORCES LET/SHIFT."
52 PRINT" DOWN-ARROW: CLEAR SCREEN"
53 PRINT" LEFT-ARROW: CHECKS MAILBOX"
54 PRINT:PRINT"      MAILBOX - 50 BAUD"
55 PRINT@450,"THIS PROGRAM WAS WRITTEN BY          ZR4AAD AND ZR4CZ";
60 FOR AA=1 TO 10:PRINT@128,Q$
70 FOR AB=1 TO 300:NEXT AB
75 PRINT@128, STRING$(32,CHR$(143))
80 FOR AC=1 TO 300:NEXT AC:NEXT AA:PRINT@128,Q$
81 PRINT@426,"please wait"
85 FOR AC=1 TO 2000:NEXT AC
90 REM******SETUP ARRAYS*******
100 DIM A$(2,31),TT(56),E$(5,5):ST=1:M=1:P=0:F=0
110 REM****** BAUDOT CODE ******
120DATA13,26,11,15,18,0,0,12,3,28,29,22,23,19,1,10,16,21,7,6,24,14,30,0,0,0,25,0,3,25,14,
9,1,13,26,20,6,11,15,18,28,12,24,22,23,10,5,16,7,30,19,29,21,17
130 DATA E, ,A," ",S,I,U, ,D,R,J,N,F,C,K,T,Z,L,W,H,Y,P,Q,O,B,G, ,M,X,V
140 DATA 3, ,-, , ,8,7, ,$,4, ,",",%,":",(,5,+,),2, ,6,0,1,9,?,&, ,.,/,=
150 FOR L=1 TO 54
160 READ TT(L)
170 NEXT L
180 FOR ST=1 TO 2:FOR L=1 TO 30
190 READ A$(ST,L)
200 NEXT L,ST
210 REM***SET UP PORT**********
220 ST=1:P=0
230 A=&HFF04:B=&HFF05:C=&HFF06:D=&HFF07
240 POKE D,241:POKE C,3
250 REM****RECEIVE ROUTINE******
260 CLS2:PRINT" DRAGON MAILBOX RECEIVE ROUTINE"
270 PRINT:ST=1
280 R=PEEK(B)
360 R$=INKEY$:IF R$="" THEN 370 ELSE IF ASC(R$)=8 THEN 720
370 IF R$="" THEN 380 ELSE IF ASC(R$)=9 THEN END
380 IF R$="" THEN 390 ELSE IF ASC(R$)=94 THEN ST=1:SOUND 20,4
390 IF R$="" THEN 400 ELSE IF ASC(R$)=10 THEN CLS2:GOTO 260
400 IF R AND 8 THEN 410 ELSE 280
410 R1=PEEK(A)
420 IF R1>0 AND R1<32 THEN 430 ELSE 280
430 IF R1=31 THEN ST=1:GOTO280
440 IF R1=27 THEN ST=2:GOTO280
450 IF R1=2 OR R1=8 THEN 510
460 B$=(A$(ST,R1))
470 C$=C$+B$:PRINT B$;
480 IF LEN(C$)>128 AND FG=2 THEN GOSUB 640
490 IF LEN(C$)>128 THEN C$="":GOTO 280
500 GOTO 280
510 PRINT
```

```
520 IF C$="" THEN 280
530 L=LEN (C$):FOR ML=L TO 1 STEP -1:IF MID$(C$,ML,1)=":" THEN 550
540 NEXT ML
550 D$=MID$(C$,ML+1)
560 IF D$="END" AND FG=2 THEN GOSUB 640:FG=0:M=M+1:P=0:GOSUB 870:TX$="MESSAGE
RECIEVED.#$WILL CONTACT YOU SOON.#$DE ZR4AAD.#$":GOSUB 990:GOSUB
940:C$="":D$="":ST=1:GOTO 280
570 IF FG=2 THEN PRINT:C$=C$+" ":GOTO 280
580 IF D$="ZR4AAD" THEN FG=1:GOSUB 870:TX$="#$DRAGON MAILBOX (ZR4AAD).#$SORRY ZR4AAD IS
NOT HERE.#$SEND RYRY:MESSAGE (C/R) TO#LEAVE A MESSAGE.":GOSUB 990:GOSUB 700:GOSUB
940:ST=1:GOTO 280
590 IF D$="BYE" AND FG=1 THEN FG=0:GOSUB 870:TX$="#$THANK YOU FOR THE CONTACT#
-73'S---#$DE ZR4AAD.#$":GOSUB 990:GOSUB 940:ST=1:GOTO 280
600 IF D$="MESSAGE" AND FG=1 THEN GOSUB 620
610 C$="":GOTO 280
620 IF M=6 THEN TX$="SORRY; BUT MY MESSAGE BUFFER IS FULL.#$PLEASE CONTACT ME LATER.#$DE
ZR4AAD.#$":GOSUB 870:GOSUB 990:GOSUB 940:ST=1:GOTO 280
630 FG=2:TX$="#END YOUR MESSAGE WITH :END (C/R)SEND YOUR MESSAGE NOW.....#$":GOSUB
870:GOSUB 990:GOSUB 940:RETURN
640 P=P+1
650 E$(M,P)=C$
660 C$=""
670 IF P=5 THEN M=M+1:P=0:GOSUB870:FOR J=1 TO
2000:NEXT:TX$="RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY#$MY BUFFER IS FULL.#$PLEASE
LOG ON AGAIN AND CONTINUE#$WITH YOUR MESSAGE.#$DE ZR4AAD.###$":GOSUB 990:GOSUB
940:FG=1:ST=1:GOTO 250
680 RETURN
690 GOTO 280
700 REM*STORE OVERFLOW MESSAGES
710 TX$="#$SEND RYRY:BYE (C/R) O-N-L-Y IF#$YOU DIDNT LEAVE A MESSAGE.#$DE
ZR4AAD.#$":GOSUB 990:RETURN
720 REM******READ MESSAGE*******
730 IF M=1 THEN SOUND200,5:GOTO 280
740 FOR K=1 TO M-1
750 CLS
760 FOR L=1 TO 5
770 PRINT"MESSAGE#";K;" PAGE#";L
780 PRINT E$(K,L)
790 IF INKEY$="" THEN 790
800 CLS
810 NEXT L
820 IF K+1=M THEN CLS:PRINT"PRESS ANY KEY TO CONTINUE...":GOTO 840
830 CLS:PRINT"PRESS ANY KEY TO SEE THE        NEXT MESSAGE.."
840 IF INKEY$="" THEN 840
850 NEXT K
860 GOTO 250
870 REM*******TX ON**********
880 FOR J=1 TO 300:NEXT J
890 POKE C,5
900 POKE D,241
910 EXEC &HC015
920 RETURN
930 REM
940 REM*******TX OFF**********
950 FOR J=1 TO 300:NEXT J
960 POKE C,3
970 EXEC &HC018
980 RETURN
990 REM**TRANSMIT ROUTINE******
1000 SA=1
```

```
1010 FOR J=1 TO 150:NEXT J
1020 L=LEN(TX$)
1030 FOR S=1 TO L
1040 B$=MID$(TX$,S,1):TX=ASC(B$)
1050 IF TX=35 THEN TX=8:PRINT:GOTO 1120
1060 IF TX=32 THEN PRINT" ";:TX=4:GOTO 1120
1070 IF TX=36 THEN TX=31:GOTO1120
1080 IF TX<65 AND SA=1 THEN SA=2:TX=27:S=S-1:GOTO 1120
1090 IF TX>64 AND SA=2 THEN SA=1:TX=31:S=S-1:GOTO 1120
1100 TX=TT(TX-36)
1110 PRINTB$;
1120 POKE A,TX
1130 IF PEEK(B) AND 16 THEN 1140 ELSE 1130
1140 NEXT S
1150 C$=""
1160 RETURN
```

*****

Moon locator.

```
30 'THIS PROGRAM IS DESIGNED TO CALCULATE THE AZIMUTH AND ELEVATION OF THE MOON.
40 'THE REQUIRED INPUT IS THE GMT MONTH,DAY,AND YEAR FOR WHICH
50 'THE MOON'S AZIMUTH AND ELEVATION ARE DESIRED. IN ADDITION, IF
60 'PRINTOUT IS DESIRED NOT ONLY WHEN THE MOON IS NEAR THE HORIZON,
70 'THE TIME INTERVAL OVER WHICH THE POSITION IS DESIRED MUST BE ENTERED.
80 '
90 '    THE COMPLETE INPUT FORMAT FOR ABOVE INFORMATION IS:
100 '
110 '                MM,DD,YYYY,TTTT,TTTT
120 '
130 'IF YOU ELECT TO HAVE PRINTOUT TO OCCUR ONLY WHEN THE MOON IS NEAR THE
140 'HORIZON,YOU WILL BE ASKED TO INPUT THE MAXIMUM ELEVATION FOR WHICH
150 'YOU WANT PRINTOUT.IN THIS CASE,YOU WILL NOT BE ASKED TO SUPPLY TIMES
160 'FOR THE TIME INTERVALS.
170 'PRINTOUT IS SUSPENDED WHENEVER THE ELEVATION OF THE MOON IS NEGATIVE.
180 '
190 ' YOU CAN ASK FOR DATA FOR UP TO 25 DAYS AT ONCE: SIMPLY TYPE IN THE
200 'INFORMATION FOR ONE DAY (AS IN THE REQUIRED FORMAT) EACH TIME THE
210 'COMPUTER PRINTS A "?".WHEN YOU HAVE ENTERED ALL THE DATA YOU WISH,
220 'FOLLOW THE LAST "?" BY AN INPUT OF ZEROS SEPERATED BY COMMAS-JUST
230 'AS IN THE FORMAT YOU WERE USING TO ENTER THE DATA.
240 '
250 ' ALL DATES AND TIMES ARE IN GREENWICH MEAN TIME. IN ADDITION ALL
260 'TIMES ARE IN THE 0000 TO 2400 HOUR SYSTEM,
270 '
280 'THIS PROGRAM WAS PUBLISHED FIRST BY LANCE COLLISTER WA1JXN/WA3GPL
290 'IN "COMPUTER PROGRAMS FOR LOCATING THE MOON" (EIMAC/DIVISION OF VARIAN),
295 'AND WARREN BUTLER,W2WD IN HAM RADIO JAN. 1985 PAGE 38-47
300 'AND HAS BEEN MODIFIED BY DK1VI TO RUN ON THE "DRAGON 32".
310 CLEAR 200
320 DIM F(25),V(25),Y(25),Q(25),S(25)
330 DEF FNA(X)=INT(X*D5*10+.5)/10
340 DEF FNB(X)=(X-INT(X))*P5
350 P5=2.0*3.1415926535
360 D5=360.0/P5 'CONVERSION TO DEGREES
370 R5=P5/360.0 'CONVERSION TO RADIANS
380 CLS3:CLS40
390 PRINT:PRINT"                    ***MOON-LOC***":PRINT:CLS41:PRINT:LINEINPUT"WHAT IS THE
CALLSIGN OF THE STATION ? ";Z8$
```

```
400 IF Z8$="DK 1 VI" THEN READL5,U5,L6,U6:RESTORE:GOTO 450
410 PRINT
420 INPUT"WHAT IS THE LATITUDE IN DEGREES,MINUTES";L5,U5
430 PRINT
440 INPUT"WHAT IS THE LONGITUDE IN DEGREES,MINUTES";L6,U6
450 L5=(L5+U5/60)*R5
460 L6=(L6+U6/60)*R5
470 PRINT
480 INPUT"WHAT IS THE DESIRED PRINTING INCREMENT IN          MINUTES";I
490 INPUT"DO YOU ONLY WANT PRINTOUT WHEN THE MOON IS NEAR    HORIZON";B$
500 '
510 IF B$="YES" THEN 540
520 I6=100
530 GOTO 620
540 INPUT"BELOW WHAT ELEVATION DO YOU WANT PRINTOUT TO OCCUR";I6
550 '
560 PRINT"WHAT ARE THE GMT MONTH,DAY,YEAR DESIRED?"
570 FOR N=1 TO 25
580 INPUT F(N),V(N),Y(N)
590 IF F(N)=0 THEN 690
600 NEXT N
610 GOTO 570
620 PRINT"WHAT ARE THE GMT MONTH,DAY,YEAR,TIME INTERVAL (BEGINNING,"
630 PRINT"ENDING) DESIRED?"
640 FOR N=1 TO 25
650 INPUT F(N),V(N),Y(N),Q(N),S(N)
660 IF F(N)=0 THEN 690
670 NEXT N
680 GOTO 640
690 N5=N-1
700 FOR N=1 TO N5
710 IF B$="YES" THEN 730
720 GOTO 760
730 E1=2400
740 B=0
750 GOTO 780
760 E1=S(N)
770 B=Q(N)
780 M=F(N)
790 D=V(N)
800 Y=Y(N)
810 Y1=Y-(INT(Y/100)*100)
820 PRINT"PLEASE SELECT OUTPUT DEVICE (PRINTER/SCREEN)"
830 Q$=INKEY$:IF Q$="" THEN 830
840 IF Q$="S" THEN PR=0 ELSE IF Q$="P" THEN PR=-2 ELSE 830
850 IF PR=-2 THEN PRINT#-2,CHR$(&HF):PRINT#-2
860 GOSUB 2300
870 IF PR=0 THEN 930
880 PRINT#-2,"POSITION OF THE MOON ON  "M$;"/";D;"/";Y;" AT ";Z8$
890 PRINT#-2,"GMT","AZ","EL","GHA","DEC"
900 PRINT#-2,"===","==","==","===","==="
910 PRINT#-2
920 POKE65497,0:POKE65494,0:GOTO 970:'SPEED POKE
930 CLS3:CLS40:PRINT"POSITION OF THE MOON ON  "M$;"/";D;"/";Y;" AT ";Z8$:CLS41
940 PRINT" GMT        AZ          EL        GHA          DEC":
950 PRINT"=============================================="
960 POKE65495,0:'SPEED POKE
970 I1=2
980 'HERE BEGINS CALCULATION OF JULIAN DATE
990 IF M>=3 THEN 1070
```

```
1000 IF INT((Y-1853)/4)<11 THEN 1030
1010 C1=-1
1020 GOTO 1040
1030 C1=0
1040 J1=365*(Y-1853)+D+30*(M+9)+INT((M+10)/2)
1050 J2=INT((Y-1853)/4)+1+C1
1060 GOTO 1180
1070 IF INT((Y-1852)/4)<11 THEN 1100
1080 C1=-1
1090 GOTO 1110
1100 C1=0
1110 IF M=9 THEN 1150
1120 IF M=11 THEN 1150
1130 C2=0
1140 GOTO 1160
1150 C2=1
1160 J1=365*(Y-1852)+D+30*(M-3)+INT((M-2)/2)
1170 J2=INT((Y-1852)/4)+C1+C2
1180 J=J1+J2 '(JULIAN DATE-2397547.5) FOR 0 HOURS GMT
1190 JD=J+2397547.5:GOSUB2490
1200 PRINT#PR," PATH LOSS INCREASE +";DB;" DB"
1210 T1=J-17472.5
1220 D9=(B-INT(B/100)*100)+INT(B/100)*60
1230 D6=(E1-INT(E1/100)*100)+INT(E1/100)*60
1240 D7=D9-D6
1250 D8=D7-I
1260 IF D7>0 THEN 1280
1270 GOTO 1310
1280 IF D8>=0 THEN 2170
1290 B=E1
1300 'CALCULATION OF LATITUDE AND LONGITUDE OF MOON
1310 T=(B-INT(B/100)*100)/1440+INT(B/100)/24
1320 T5=T1+T
1330 K1=FNB(.751213+3.6601102E-2*T5)
1340 K2=FNB(.822513+3.62916457E-2*T5)
1350 K3=FNB(.995766+2.73777852E-3*T5)
1360 K4=FNB(.974271+3.38631922E-2*T5)
1370 K5=FNB(.0312525+3.67481957E-2*T5)
1380 L8=K1+.658*R5*SIN(2*K4)+6.289*R5*SIN(K2)
1390 L8=L8-1.274*R5*SIN(K2-2*K4)-.186*R5*SIN(K3)
1400 L8=L8+.214*R5*SIN(2*K2)-.114*R5*SIN(2*K5)
1410 L8=L8-.059*R5*SIN(2*K2-2*K4)-.057*R5*SIN(K2+K3-2*K4)
1420 K6=K5+.6593*R5*SIN(2*K4)+6.2303*R5*SIN(K2)-1.272*R5*SIN(K2-2*K4)
1430 L7=5.144*R5*SIN(K6)-.146*R5*SIN(K5-2*K4)
1440 'CALCULATION OF RIGHT ASCENSION(A=R1) AND DECLINATION (D1)
1450 D1=COS(L7)*SIN(L8)*.397821+SIN(L7)*.917463
1460 D1=ATN(D1/(SQR(1-D1^2)))
1470 'G1=50+.5+((D1)/(.792))*D5
1480 'G2=80+((D1)/(.808))*D5
1490 'G3=141.5-((D1)*(.738)*D5)
1500 'G4=170.5-((D1)*(.857)*D5)
1510 A2=COS(L7)*COS(L8)/COS(D1)
1520 A1=(COS(L7)*SIN(L8)*.917463-SIN(L7)*.397821)/COS(D1)
1530 A=ATN(A1/A2)
1540 GOSUB 1870
1550 R1=A
1560 R2=R1*57.295779*24/360
1570 L1=6.5709822E-2*T1
1580 L=T*24*1.002738+6.646055+(L1-INT(L1/24)*24)
1590 LA=L-(L6*24*57.295779/360)*1.002738
```

```
1600 L=(L-INT(L/24)*24)
1610 'CALCULATION OF GHA,G FROM LOCAL SIDERAL TIME
1620 G=(L/24)*P5-R1
1630 IF G<P5 THEN 1660
1640 G=G-P5
1650 GOTO1700
1660 IF G<0 THEN 1680
1670 GOTO 1700
1680 G=G+P5
1690 'CALCULATION OF LOCAL HOUR ANGLE,H FROM GHA
1700 H=L6-G
1710 GOSUB2760:'PARALLAX CORRECTIONS
1720 'CALCULATION OF ELEVATION
1730 E3=COS(L5)*COS(H)*COS(D1)+SIN(D1)*SIN(L5)
1740 E2=SQR(1-(E3*E3))
1750 E=ATN(E3/E2)
1760 F=E
1770 IF E<0 THEN 2120
1780 IF E>I6*R5 THEN 2120
1790 'CALCULATION OF AZIMUTH,A
1800 A2=SIN(D1)/(COS(L5)*COS(F))
1810 A2=A2-(SIN(L5)/COS(L5))*(SIN(F)/COS(F))
1820 A1=SIN(L5)*SIN(D1)+COS(L5)*COS(D1)*COS(H)
1830 A1=(SIN(H)*COS(D1))/(SQR(1-A1^2))
1840 A=ATN(A1/A2)
1850 GOSUB 1870
1860 GOTO 2030
1870 'REMOVAL OF AMBIGUITIES INCURRED WITH ATN-FUNCTION
1880 IF A=0 THEN 1900
1890 GOTO 1940
1900 IF A2<0 THEN 1920
1910 GOTO 2020
1920 A=P5/2
1930 GOTO 2020
1940 IF A>0 THEN 2000
1950 IF A2<0 THEN 1980
1960 A=P5+A
1970 GOTO 2020
1980 A=P5+(A-P5/2)
1990 GOTO 2020
2000 IF A2>=0 THEN 2020
2010 A=A+P5/2
2020 RETURN
2030 IF (T-I1)>(2*I)/1440 THEN 2050
2040 GOTO 2060
2050 PRINT#PR
2060 GOSUB 2430:IF PR=0 THEN 2090
2070 PRINT#-2,USING"%  %";TI$;
2080 PRINT#-2,USING"          ###.#          ###.#          ###.#
###.#";FNA(A),FNA(E),FNA(G),FNA(D1):GOTO2110
2090 PRINTUSING"%  %";TI$;
2100 PRINTUSING"     ###.#     ###.#     ###.#     ###.#";FNA(A),FNA(E),FNA(G),FNA(D1)
2110 I1=T
2120 B=B+I
2130 Z=(B-INT(B/100)*100)-60
2140 IF Z<0 THEN 1220
2150 B=INT(B/100)*100+100+Z
2160 GOTO 1220
2170 NEXT N
2180 N=0
```

```
2190 POKE65494,0:POKE65496,0:'SLOW DOWN SPEED TO NORMAL
2200 CLS37:CLS3:PRINT@226,"DO YOU WANT MORE INFORMATION      (YES/NO)"
2220 INPUT D$
2230 IF D$="YES" THEN 470
2240 PRINT"END"
2250 PRINT#-2,"END"
2260 'DATA FORMAT:OWN LATITUDE IN DEGREES,MINUTES,OWN LONGITUDE IN DEGREES,MINUTES
2270 DATA49,17.5,351,21.5
2280 END
2290 'CONVERSION TO ALPHA-MONTH
2300 ON M GOTO 2310,2320,2330,2340,2350,2360,2370,2380,2390,2400,2410,2420
2310 M$="JAN":RETURN
2320 M$="FEB":RETURN
2330 M$="MAR":RETURN
2340 M$="APR":RETURN
2350 M$="MAY":RETURN
2360 M$="JUN":RETURN
2370 M$="JUL":RETURN
2380 M$="AUG":RETURN
2390 M$="SEP":RETURN
2400 M$="OCT":RETURN
2410 M$="NOV":RETURN
2420 M$="DEC":RETURN
2430 'ROUTINE TO TIDY-UP TIME STATEMENT
2440 TI$=STR$(INT(B+.5))
2450 E$="0000"
2460 U=5-LEN(TI$)
2470 TI$=LEFT$(E$,U)+RIGHT$(TI$,4-U)
2480 RETURN
2490 'CALCULATE DISTANCE TO THE MOON
2500 DD=JD-2444238.5
2510 AA=0.98564733:ED=-3.76286
2520 MS=(AA*DD)+ED
2530 IF MS<0 THEN MS=MS+360:GOTO2530
2540 IF MS>360 THEN MS=MS-360:GOTO2540
2550 AE=0.1858*SIN(MS*0.0174533)
2560 AF=0.37*SIN(MS*0.0174533)
2570 LS=AA*DD+1.9157417*SIN(0.0174533*(AA*DD-3.76286))+278.833540
2580 IF LS<0 THEN LS=LS+360:GOTO 2580
2590 IF LS>360 THEN LS=LS-360:GOTO 2590
2600 LL=(13.1763966*DD)+64.975464
2610 IF LL<0 THEN LL=LL+360:GOTO 2610
2620 IF LL>360 THEN LL=LL-360:GOTO 2620
2630 CC=LL-LS
2640 MM=LL-(0.1114041*DD)-349.383063
2650 IF MM<0 THEN MM=MM+360:GOTO 2650
2660 IF MM>360 THEN MM=MM-360:GOTO 2660
2670 EV=1.2739*SIN((2*CC-MM)*0.0174533)
2680 MN=MM+EV-AE-AF
2690 EC=6.2886*SIN(MN*0.0174533)
2700 MD=383242.41/(1+0.054900*COS((MN+EC)*0.017453292))
2710 'CONVERT DISTANCE VARIATION TO PATH LOSS CHANGE (DB)
2720 DB=MD/356334
2730 DB=40*LOG(DB)/LOG(10)
2740 DB=INT(DB*10+.5)/10
2750 RETURN
2760 'CORRECTIONS FOR PARALLAX
2770 H1=H
2780 RT=MD/6378.16
2790 U=ATN(0.996647*TAN(L5))
```

```
2800 P1=0.996647*SIN(U)
2810 P2=COS(U)
2820 HC=ATN(P2*SIN(H)/(RT*COS(D1)-P2*COS(H)))
2830 H=H+HC
2840 G=L6-H
2850 D1=ATN(COS(H)*(RT*SIN(D1)-P1)/(RT*COS(D1)*COS(H1)-P2))
2860 RETURN
```

*****

```
1 'ELLIPTICAL ORBIT
2 'DATA FORMAT:YEAR OF EPOCH, EPOCH, INCLINATION, NO.OF ORBIT, MEAN ANOMALIE,
3 'MEAN MOTION, EXCENTRICITY, ARGUMENT OF PERIG., RAAN, STATION LAT.,-LONG(W)
4 DATA84,258.586018519,25.60,945,0, 2.05849941,.6084, 306.29, 178.13, 49.27083, 351.36667
5 CLS3
20 DIM T$(4)
100 DIM C(3,2)
110 GOTO1200
1030 D$=STR$(T4)
1050 D$=MID$(D$,2)
1060 U=LEN(D$)
1070 IFU=3THENT$="0"+D$:RETURN
1080 IFU=2THENT$="00"+D$:RETURN
1090 T$=D$:RETURN
1200 'OSCAR 10 INFORMATION BOARD
1201 CLS 37
1206 RESTORE
1210 PRINT"   OSCAR 10 PLOTBOARD"
1215 PRINT
1220 PRINT"ENTER WANTED DAY NUMBER"
1230 INPUT DM
1240 PRINT!128,DM
1250 PRINT"ENTER MONTH NUMBER"
1260 INPUT M
1300 PRINT!179,M
1310 PRINT"ENTER YEAR NUMBER,YY"
1320 INPUT Y
1330 PRINT!230,Y
1360 A$="0000"
1370 DB=DM:MO=M:YE=Y
1380 GOTO10000
1400 T1=VAL(A$)
1410 POKE65495,0
1420 XN=0:YN=0
1440 D6=INT(Y/4)-INT((Y-1)/4)+212+DM+(SGN(M-8)*(INT(.5+(ABS((M-8)*30.5)))))
1450 IF M<3 THEN D6=DM+(M-1)*31
1520 READ Y2,T0,I0,K0,M0,N0,E0,W0,O0
1640 G0=7.5369793E13
1650 G1=1.0027379093
1660 G2=.2759328721
1700 IF Y=83 THEN G2=.2752697531
1710 IF Y=84 THEN G2=.2746066342
1730 D6=D6+365*(Y-Y2)
1740 P1=3.14159265
1750 P2=2*P1
1760 P0=P1/180
1770 T2=(INT(T1/100))/24+D6
1780 T=T2
1800 READ L9,W9
```

```
1820 H9=120
1830 R0=6378.16
1840 F=1/298.25
1850 IF N0>.1 THEN A0=((G0/(N0^2))^(1/3))
1860 IF N0<=.1 THEN N0=SQR(G0/(A0^3))
1900 E2=1-E0^2
1910 E1=SQR(E2)
1920 FA=0
1930 Q0=M0/360+K0
2010 K2=9.95*((R0/A0)^3.5)/(E2^2)
2020 S1=SIN(I0*P0)
2030 C1=COS(I0*P0)
2040 O=O0-(T-T0)*K2*C1
2050 S0=SIN(O*P0)
2060 C0=COS(O*P0)
2100 W=W0+(T-T0)*K2*(2.5*(C1^2)-.5)
2110 S2=SIN(W*P0)
2120 C2=COS(W*P0)
2140 C(1,1)=(C2*C0)-(S2*S0*C1)
2150 C(1,2)=-(S2*C0)-(C2*S0*C1)
2160 C(2,1)=(C2*S0)+(S2*C0*C1)
2200 C(2,2)=-(S2*S0)+(C2*C0*C1)
2210 C(3,1)=(S2*S1)
2220 C(3,2)=(C2*S1)
2230 Q=N0*(T-T0)+Q0
2240 K=INT(Q)
2250 M9=INT((Q-K)*256)
2260 M=(Q-K)*P2
2300 E=M+E0*SIN(M+.5*(E0^2))*SIN(2*M)
2310 S3=SIN(E)
2320 C3=COS(E)
2330 R3=1-E0*C3
2340 M1=E-E0*S3
2350 M5=M1-M
2360 IF ABS(M5)<1E-6 THEN GOTO 2410
2370 E=E-M5/R3
2400 GOTO 2310
2410 X0=A0*(C3-E0)
2420 Y0=A0*E1*S3
2430 R=A0*R3
2440 X1=X0*C(1,1)+Y0*C(1,2)
2450 Y1=X0*C(2,1)+Y0*C(2,2)
2460 Z1=X0*C(3,1)+Y0*C(3,2)
2660 G7=T*G1+G2
2670 G7=(G7-INT(G7))*P2
2680 S7=-SIN(G7)
2690 C7=COS(G7)
2700 X=(X1*C7)-(Y1*S7)
2740 Y=X1*S7+Y1*C7
2750 Z=Z1
2760 L8=L9*P0
2770 S9=SIN(L8)
2780 C9=COS(L8)
2790 S8=SIN(-W9*P0)
2800 C8=COS(W9*P0)
2840 R9=R0*(1-(F/2)+(F/2)*COS(2*L8))+H9/1000
2850 L8=ATN((1-F)^2*S9/C9)
2860 Z9=R9*SIN(L8)
2870 X9=R9*COS(L8)*C8
2880 Y9=R9*COS(L8)*S8
```

```
2890 X5=X-X9
2900 Y5=Y-Y9
2940 Z5=Z-Z9
2950 R5=SQR(X5*X5+Y5*Y5+Z5*Z5)
2960 DZ=6378/R
2970 DZ=57.3*(-ATN(DZ/SQR(-DZ*DZ+1))+P1/2)
2980 Z8=(X5*C8*C9)+(Y5*S8*C9)+(Z5*S9)
2990 X8=-(X5*C8*S9)-Y5*S8*S9+Z5*C9
3000 Y8=Y5*C8-X5*S8
3040 S5=Z8/R5
3050 C5=SQR(1-S5*S5)
3060 E9=(ATN(S5/C5))/P0
3080 A9=(ATN(Y8/X8))/P0
3090 B5=Z/R
3100 L5=(ATN(B5/(SQR(1-B5*B5))))*57.3
3140 W5=(ATN(Y/X))*57.3
3150 IF X<0 THEN W5=180-W5
3160 IF X>0 AND Y<0 THEN W5=-W5
3170 IF X>0 AND Y>0 THEN W5=360-W5
3180 IF X=0 AND Y>=0 THEN W5=270
3190 IF X=0 AND Y<0 THEN W5=90
3200 IF X8<0 THEN A9=A9+180
3240 IF X8>0 AND Y8<0 THEN A9=360+A9
3250 IF X8=0 AND Y8>=0 THEN A9=90
3260 IF X8=0 AND Y8<0 THEN A9=270
3270 T4=INT((T-INT(T))*2400+.5)/100
3280 T4=100*((T4-INT(T4))*.6+INT(T4))
3290 GOSUB 1030
3300 IF FA=1 THEN GOTO 3460
3340 GOSUB20000
3350 T=T+1/96
3360 IF (T-T2)>1 THEN GOTO 3372
3370 GOTO 2040
3372 XY$=INKEY$
3373 IF XY$="P" THEN GOSUB 30000
3374 IF XY$="Y" THEN GOTO 3380
3375 IF XY$="N" THEN GOTO 5000
3376 GOTO 3372
3600 GOTO2040
5000 T1=T4+15
5001 DM=DB:M=MO:Y=YE
5002 C$=STR$(T1)
5003 IF RIGHT$(C$,2)="60" THEN T1=VAL(C$)+40
5005 RESTORE
5006 IF T1>=2400 THEN GOTO 1200
5010 GOTO 1440
10000 '********************
10010 '  WORLD MAP
10020 '********************
10030 '
10040 PMODE 4:CLS 2
10050 DRAW"BM2,24;E2R4U4E6R4E2E4F4D2F4R8F4E4H4E6F4R2H4E4F4D4E6H2E2F2G4R6G4R2D4R2D2G4D2"
10060DRAW"BM74,24;H6L6U2R2U4G6D2L6G6D4R4D4R2U4R4U4E6R2D4R4D4F4G4R2D2L6U2G2H2G1F2G2F2E2F2"
10070DRAW"BM70,40;G6H1E2H1G11H3D1F3G11D6L2U4G1H4L2F2L6G4D6F4E4R2G6R3D6F6E6R2F4R4D2R2F6R4D
4"
10080 DRAW"BM66,104;G2F2E2F6D12G8D12G8L4F3D2G6D6F4D6F3R2D2L6H8U4H3E2U36E2"
10090DRAW"BM46,129;U4H6U4H2U4E4U2L4U4L4H10L3H4U6E2U8L2D6L1U8E2U14R1D2R1U8H6L2U2L2D2L6H6U8
"
10100 DRAW"BM92,6;R20G2R8G6D4G2H2G2F2G6L4G14H4U6E6U4L6U3E5H6E8F5"
10110 DRAW"BM98,32;F1R4D2G2L2H2E2"
```

```
10120 DRAW"BM108,40;R4G2R2D2G2D2F4D2L2R2D2L6G2U2E2L2E2L2E2U2L4D4G4H2U4E2R6U4L2E4"
10130DRAW"BM192,10;H4G2F8G2L6D2G3L4H2L2D4L4U2L4U2E6H2G8F4R2D2L6H3G2D2G4U4H3L10G4D2G4L4G6D
4F2E2R1"
10140DRAW"BM130,45;D4R2U2E3U5E5F1G4D6G6L2G2L2H2U2L2D2G2L2G2L2G4L4D2F1R1D1F1R1D1L8G2D5F2D2
R2E2"
10150DRAW"BM106,74;U5R4E6F9D2E4H10R4F6D2F6E3H2E1F2R2E2H3U2E2F3E2F3G3L6G3L2D2F2R6D2G4L6H4L
2D2"
10160 DRAW"BM126,80;L6H2U2H2L8G4L4G4D2G4D14F6R6E2R6F2D16F3D8G3D5F2D2F2D2F2D2F2"
10170DRAW"BM124,158;E10U2E4U4E2H4E8F3D8F2E4U4E4U4L2G4L2D2L2H3E2H3U9E15H1L4G2L3H1U4H4U2L2U
2L1U2L1"
10180 DRAW"BM145,86;R2U3F8E8U4H3G2D2G2H2U1H1E2F6R6F2R4E2R3F2D4R3F2D4F2D2F4"
10190DRAW"BM190,100;E2F3G2H2E2H1E2U4E6F2D4R4D2R2D4R1D2R1D2R1D2R1D2R1D2R2U4H4U2H4U3R2F6R4U4H6U
6R3"
10200DRAW"BM215,80;D2R2E3R2E4U2E4U4H8E3H4R4D2F4R2E2H4E6U10R4U3L8U2E4R8H6R3F6G2F10U4H5U2R4
U2H2E2R6"
10210 DRAW"BM254,18;U2H4L6G2L4H2L6H4G3L6E2H4R3U2L6D2F6L4H5D2L4H2G4L6"
10220 DRAW"BM246,42;G6D2F2D5G6D5R2U3R4E2U6H3E2U3E4H2"
10230 DRAW"BM208,105;D4F12E2G1F4R2F2R3F2R2E2R2F4L3H4L8H16U4L2"
10240 DRAW"BM220,108;E8R2F2G2D3F2D4L5H4U4"
10250 DRAW"BM240,108;F3D2L2G2D1F2L3H2U4E4"
10260 DRAW"BM228,84;R2F8D2G2L2U2H4U4"
10270 DRAW"BM242,120;F4R2E2R4D4F4D1L2H4G2H5U2H4U2E2"
10280DRAW"BM232,130;R3D8L2U4L5G4L4G4D2G6D6F2R2E4R10F6D2F2R3D4G2H2R2U2E4U2E2U2E2U6H2U2H2U2
H1U7L4"
10290 DRAW"BM252,152;R1D3R1F2D1G2L2D3G2D3G6L2U1E16U4H2E2"
10300 DRAW"BM160,56;D2G2D2R2D2F2G3L1H3U1E4H4U1E1R2"
10310 DRAW"BM40,76;R4F4R3D2R3D1L3U1L5U2L5U4"
10320 LINE(110,0)-(110,192),PSET
10330 LINE(0,100)-(256,100),PSET
10331 CLS40:PRINT@1197," OSCAR 10 ON";DB;"/";M;"/";YE;:CLS41
10340 GOTO 1400
20000 YG=-INT(L5*96/90)+100
20010 XG=-INT(W5*256/360)+110
20020 IF XG<0 THEN XG=XG+255
20030 IF XN=0 AND YN=0 THEN PSET(XG,YG,1):GOTO20070
20040 IF XN>XG THEN PSET(XG,YG,1):GOTO20070
20050 IF (XG-XN)>100 THEN PSET(XG,YG,1):GOTO20070
20060 LINE(XN,YN)-(XG,YG),PSET
20070 XN=XG:YN=YG
20080 RETURN
30000 PRINT#-2,CHR$(8)
30010 FOR X=255 TO 0 STEP -7
30020 FOR Y=0 TO 191
30030 A=PPOINT(X,Y)+PPOINT(X,Y)*2+PPOINT(X-1,Y)*4+PPOINT(X-1,Y)*8+PPOINT(X-
2,Y)*16+PPOINT(X-2,Y)*32+PPOINT(X-3,Y)*64+128
30040 PRINT#-2,CHR$(A);CHR$(A);
30050 NEXTY
30060 PRINT#-2,CHR$(13);
30070 FOR Y=0TO 191
30080 IF X>3 THEN A=PPOINT(X-3,Y)+PPOINT(X-4,Y)*2+PPOINT(X-4,Y)*4+PPOINT(X-
5,Y)*8+PPOINT(X-5,Y)*16+PPOINT(X-6,Y)*32+PPOINT(X-6,Y)*64+128 ELSE A=PPOINT(X-3,Y)+128
30090 PRINT#-2,CHR$(A);CHR$(A);
30100 NEXT Y
30110 PRINT#-2,CHR$(13);
30120 NEXT X
30130 PRINT#-2,CHR$(15)
```